

above, recites "exposure light." Thus, it is respectfully submitted that proper antecedent basis is provided for this feature.

II. THE CLAIMS DEFINE ALLOWABLE SUBJECT MATTER

The Office Action rejects claims 1, 12, 17-26 and 28-50 under 35 U.S.C. §103 as unpatentable over U.S. Patent No. 6,142,641 to Cohen et al. (hereinafter "Cohen"). The rejection is respectfully traversed.

A. Claims 1 and 29-39

Cohen discloses the testing of the alignment of the four mirrors 2-5 used in the lithography projection system 1 via the pin mirror interferometer 30 of Figs. 5A and 5B which uses light at visible to UV wavelengths generated by source 31, and the testing of the surface shapes of the mirrors 2-5 via the pin mirror interferometers of Figs. 6A, 6B, 7, 8 and 9. However, Cohen only discloses the testing of the mirrors 2-5 used for transferring a pattern on the reticle 6 to the substrate 7, and unlike the claimed invention, does not disclose the adjustment of an optical property of the optical system which includes at least an illumination system. Moreover, Cohen does not even suggest the generation of exposure light for obtaining an optical property of the optical system at the wavelength of the exposure light.

B. Claims 12, 17 and 40-46

Cohen only discloses the testing of the mirrors 2-5 used for transferring a pattern on the reticle 6 to the substrate 7, and unlike the claimed invention, does not disclose the adjustment of an optical property of the optical system which includes at least an illumination system based on the output of a first sensor which receives non-exposure light. Moreover, Cohen does not even suggest the provision of a second sensor which receives exposure light to obtain an optical property of the optical system at the wavelength of the exposure light.

C. Claims 18-22

Cohen discloses the use of the pin mirror interferometers of Figs. 6A, 6B, 7, 8 and 9 for carrying out testing and correction of the surface shapes of the mirrors 2-5, and the use of the pin mirror interferometer of Figs. 5A and 5B for aligning the mirrors 2-5 relative to the subsystem 8 (col. 14, lines 18-23). However, Cohen only discloses the testing or alignment of the mirrors 2-5 used for transferring a pattern on the reticle 6 to the substrate 7, and unlike the claimed invention, does not even suggest the provision of a light source position observation system which forms an image of an x-ray source using light which has a different wavelength from that of the x-rays and which is generated concurrently with the x-rays from the x-ray source in order to obtain position information relating to the x-ray source.

D. Claims 23, 47 and 48

Cohen discloses the use of the pin mirror interferometer of Figs. 5A and 5B for aligning the mirrors 2-5 relative to the subsystem 8. However, Cohen only discloses the alignment of the mirrors 2-5 used for transferring a pattern on the reticle 6 to the substrate 7 relative to the subsystem 8, and unlike the claimed invention, does not even suggest the adjustment of an x-ray source with respect to an illumination system which irradiates exposure light onto an original.

E. Claims 24 and 49

Cohen only discloses the alignment of the mirrors 2-5 used for transferring a pattern on the reticle 6 to the substrate 7 relative to the subsystem 8, and unlike the claimed invention, does not even suggest the adjustment of an x-ray source with respect to an illumination system which irradiates exposure light onto an original.

F. Claims 25, 26, 28 and 50

Cohen only discloses the testing of the mirrors 2-5 used for transferring a pattern on the reticle 6 to the substrate 7, and unlike the claimed invention, does not suggest the adjustment of an optical property of the optical system which includes at least an illumination

system by receiving non-exposure light. Moreover, Cohen does not even suggest the adjustment of an optical property of the optical system at the wavelength of the exposure light by receiving the exposure light.

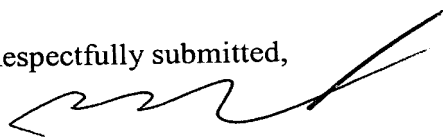
For at least these reasons, it is respectfully submitted that the claimed invention is distinguishable over the applied art. Withdrawal of the rejection under 35 U.S.C. §103 is respectfully requested.

III. CONCLUSION

For at least these reasons, it is respectfully submitted that this application is in condition for allowance.

Should the Examiner believe that anything further would be desirable in order to place this application in better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number set forth below.

Respectfully submitted,



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Attachments:

Petition for Extension of Time
Appendix

Date: December 17, 2002

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<p>DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
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APPENDIX

Changes to Claims:

The following is a marked-up version of the amended claim(s) 12:

12. (Twice Amended) An exposure apparatus which exposes an object with exposure light, comprising:

a light source in which optical components are installed and which generates said exposure light and non-exposure light having a wavelength which is different from that of said exposure light and including at least one of ultraviolet light and visible light;

an optical system disposed on an optical path through which said exposure light passes and including at least an illumination system which irradiates said exposure light onto an original; ~~and~~

a first ~~photo~~-sensor that receives said non-exposure light from said light source through at least a part of said optical system and output of which is used in adjustment of an optical property of said optical system; ~~;~~

~~wherein said optical property is being~~ adjusted based on the output from said first ~~photo~~-sensor; ~~;~~ and

~~a second sensor that receives said exposure light is generated from said light source~~ through at least a part of said optical system to obtain an optical property of said optical system at the wavelength of said exposure light.